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United States Patent

[19]

Kelman et al.[11] **Patent Number:** **5,476,515**[45] **Date of Patent:** **Dec. 19, 1995**[54] **METHOD OF MAKING INTRAOCULAR LENSES WITH INJECTABLE COLLAGEN-BASED COMPOSITIONS**[75] Inventors: **Charles D. Kelman**, New York, N.Y.; **Dale P. DeVore**, Chelmsford, Mass.[73] Assignee: **Autogenesis Technologies, Inc.**, Acton, Mass.[21] Appl. No.: **158,019**[22] Filed: **Nov. 24, 1993****Related U.S. Application Data**

[63] Continuation of Ser. No. 740,838, Aug. 6, 1991, abandoned.

[51] **Int. Cl.⁶** **A61F 2/16**[52] **U.S. Cl.** **623/6**; 623/4; 623/901; 606/107; 424/424; 424/427[58] **Field of Search** 606/107; 623/4; 623/6, 901; 424/424, 427[56] **References Cited****U.S. PATENT DOCUMENTS**

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[57] **ABSTRACT**

Injectable collagen-based compositions can be used in methods to fill a lens capsular sac, following lens extraction procedures, to form a new intraocular lens. Purified soluble or partially fibrillar collagen may be modified with acylating agents, sulfonating agents or combinations thereof to form a clear, transparent collagen composition having indices of refraction between about 1.2 to 1.6. The modified collagen may be injected into a lens capsular sac to form an intraocular lens (IOL) in situ. The IOL is clear, transparent, resistant to epithelialization and is capable of accommodation. The collagen-based IOL produced by the method of the present invention may remain in its original viscous liquid state or may be polymerized into a soft gel. The collagen-based IOL may be used to replace diseased or natural lens to treat cataracts, presbyopia, myopia and hyperopia.